**WHAT IS CLAIMED IS:**

1. A method for manufacturing an electronic device including a semiconductor memory, the method comprising:

forming a first carbon electrode material;

surface-treating the first carbon electrode material to decrease a surface roughness of the first carbon electrode material; and

forming a second carbon electrode material directly on a surface of the surface-treated first carbon electrode material, wherein the second carbon electrode material has a thickness that is less than a thickness of the first carbon electrode material.

2. The method of claim 1, wherein surface-treating the first carbon electrode material includes performing an etching process, an ion injection process, or a doping process.

3. The method of claim 1, wherein the thickness of the second carbon electrode material is 100 Å or less.

4. The method of claim 1, wherein the second carbon electrode material has a surface roughness of 30 Å or less.

5. The method of claim 1, wherein the first carbon electrode material and the second carbon electrode material have the same resistivity.

6. The method of claim 1, wherein the first carbon electrode material and the second carbon electrode material have different resistivities.

7. The method of claim 1, wherein the first carbon electrode material is formed at a first temperature, and the second carbon electrode material is formed at a second temperature different from the first temperature.

8. The method of claim 1, wherein the surface-treated first carbon electrode material and the second carbon electrode material have different impurity concentrations.

9. The method of claim 1, wherein forming the first carbon electrode material, surface-treating the first carbon electrode material, and forming of second carbon electrode material are performed in-situ.

10. A method for manufacturing an electronic device including a semiconductor memory, the method comprising:

forming a first carbon electrode material under first process conditions; and

forming a second carbon electrode material directly on a surface of the first carbon electrode material under second process conditions

different from the first process conditions, wherein a thickness of the second carbon electrode material is less than a thickness of the first carbon electrode material.

11. The method of claim 10, wherein the first carbon electrode material is formed at a first temperature, and the second carbon electrode material is formed at a second temperature different from the first temperature.

12. The method of claim 10, wherein the first carbon electrode material includes an impurity of a first concentration, and the second carbon electrode material includes an impurity of a second concentration different from the first concentration.

13. The method of claim 10, wherein the second carbon electrode material has a thickness of 100 Å or less.

14. The method of claim 10, wherein the second carbon electrode material has a surface roughness of 30 Å or less.

15. The method of claim 10, wherein the first carbon electrode material and the second carbon electrode material have different resistivities

16. The method of claim 10, further comprising surface-treating the first carbon electrode material before the second carbon electrode material is formed.

17. An electronic device including a semiconductor memory,

wherein the semiconductor memory includes:

a row line;

a column line intersecting the row line; and

a memory cell located between the row line and the column line, the memory cell including a first carbon electrode material and a second carbon electrode material which is formed directly on a surface of the first carbon electrode material and has a thickness of 100 Å or less.

18.The electronic device of claim 17, wherein the second carbon electrode material has a surface roughness of 30 Å or less.

19. The electronic device of claim 17, wherein the first carbon electrode material and the second carbon electrode material have the same resistivity.

20. The electronic device of claim 17, wherein the first carbon electrode material and the second carbon electrode material have different resistivities.

21. The electronic device of claim 17, wherein the memory cell further includes a variable resistance layer and a switching layer, and

wherein the first carbon electrode material and the second carbon electrode material are interposed between the variable resistance layer and the switching layer.

22. The electronic device of claim 17, wherein the first carbon electrode material and the second carbon electrode material are electrically connected to the row line.

23. The electronic device of claim 17, wherein the first carbon electrode material and the second carbon electrode material are electrically connected to the column line.